

mechanical crank (not shown) the operator turns the crank which, e.g. normally locks upon movement of the belt **40** e.g. about 12". When the 1st Branch is selected the crank moves the belt an additional length, for example, 15 inches instead of 12 inches. During movement of the belt **40** the code of each page is read while the picture roll is advanced to that page. It will be appreciated that the hand crank may be of the wind up type so that during operation the crank may be turned and then a button (not shown) may be pushed for movement of the belt **40**. In this case, the reverse button **22** would also be interconnected with the belt **40** mount to initiate a reverse direction thereof.

Referring again to FIGS. 4A and 4C, a segment of the cartridge belt is depicted showing the placement of the bar coding **54** and a beginning of a typical branching story. The story belt could be set up as follows: The nine inch area, area shown approximately at **50**, preceding each frame (picture) is reserved for the rows of bar code (which loads the data). The next three inches, area **52**, is for the first "page" or picture **53**. The number of alternative stories which are operable at a time determine the number of side by side pages (in a page-group **59**). Each page in a group is for a different branch of the story. A first page **59'** is used for the main story and the first story branch uses a second page **59"** of the group, and the bar code following the first Branch index. The second story branch would use the third page (not shown) of the page group **59** etc. The bar code row **58** for the first branch story is read as a result of by-passing the initial code sequence. This action in effect moves the belt in the forward direction 15 inches instead of 12 inches (the amount the belt would have moved if the story track had not been changed from the main story). Thus, the bar code reader stores only the second bar code set for the first story branch. This is how the bar code for each page is read while the picture roll is advancing to that page.

The bar coding may represent a variety of information which is integrated with stored information in the microprocessor. Examples of specific information preferably encoded on the bar coding includes speech, sounds such as animal roars, questions and answers, and branching information.

To facilitate the practical bar coding of speech and sound data a reduction scheme is used so that the bar code itself does not include actual digitized sound. Instead it contains only minimal codes which "call" the larger sound routines already stored in the microprocessor's **60** ROM or in an outboard ROM. For example, an 8 bit code can allow us access to over 250 words and sounds. Extra wide bars can be employed as start and stop or indexes for branch number indicators.

The belt **40** is depicted as including subsequent picture pages **64**, **66**. It should be noted that pages **56**, **64**, **59'** and **59A"** are equivalent to the FIGS. 6-9 to be discussed hereinafter. Of course, there is a limit to the number of spoken words for each page. This limit is a function of the total amount of digitized voice code stored in the rom in microprocessor **60**. This limit can be overcome by employing either extremely dense bar code or magnetic tape and allowing the code itself to contain sound information.

Referring now to FIGS. 1, 6-9 and **10**, the following sequence provides an example of the operation and performance of the interactive talking picture machine of this invention. First, the story (or collection of shorter stories) are written, type-set and printed on paper belts **40**. Optionally the belts may be bound by laminating a plastic film over the paper belt **40** which can be up to any desired length

which can be enclosed in a cartridge. Each colored page or frame ("page") fills up the frame with graphics and text. The pages are sequenced by winding a crank (or alternatively, using a battery operated motor), in either case it automatically stops at the next page in the story as previously described. While the picture is being sequenced, a song or sound effect is played. Each cartridge contains at least one story although it will be appreciated that more may be included. A front or "A" side story which may be continued on back or a back story, to accomplish this the cartridge roll is preferably printed on both sides. Thus, when the first story reaches the end, the cartridge can be removed and inserted in reverse (back side up). Of course, the second side can be a continuation of the first story and further multiple cartridges may be used for a single extended story.

Each page has both pictures and words. In the Press and Say mode when the child touches a word, the underlying membrane key pad is actuated and the entire sentence is spoken. For instance, referring to FIG. 6, and item **100** in FIG. **10**, if the child presses any word or spot within the dotted rectangle generally shown at **46**, the entire sentence "Where are you going? shouted the bear" will be spoken or heard. Press the bear **47** any place within the dotted rectangle generally shown at **48** and the bear will "growl". Note that the sounds and words are of digitally recorded quality which is preferably recorded by professional voices. This is accomplished as is previously described by accessing digitized speech and sound data stored in ROM.

Press the "next" button **24** to go to the next "page" or picture (frame). Referring now to FIG. 7, and item **102** in FIG. **10**, the "branching story" feature of the present invention will now be described. For example, at several points in the story, the interactive talking picture machine asks the listener to choose how he or she would like the story to continue. The selection is made by pressing e.g. a color-coded selection button or key (the "yes" or green key **26** with a smile face or the "no" or red key **28** with a frown face). The "yes" key **26** and the "no" key **28** may allow more than one option. Press the red or "no" key and the story develops one way, press the green or "yes" key and the story develops in another way. If the child does nothing at this point, the story develops in a third way. There can be as many as two or three points in the story where this branching of the story can take place. The branching is only limited by the overhead of having extra pages or frames (e.g., the length of the roll). A reader can select many different full length versions of a story for each of the two stories contained in the cartridge.

Referring to FIG. 7, a branching page is shown where the child is required to interact. At this point, the narrator automatically asks the reader how to continue the story. The choice is also printed within the—outlined rectangle **38**. When the narrator says "Do you want the gingerbread man to go with the bear?", the child has the option of pressing the green button "yes" **26** or the red button "no" **28**.

If the reader presses "no" (the button **28**) the gingerbread man will say "I ran away from a little boy and I can run away from you too!" At this point the child will press next button **4** and the story will continue as shown in FIGS. 8 and 9. In FIG. 8, and item **104** in FIG. **10**, by pressing any word in the dotted rectangle **40** the gingerbread man says "You can't catch me. I'm the Gingerbread Man" as the bear is seen chasing the gingerbread man, at which point the child presses next button **24**.

In FIG. 9, and item **106** in FIG. **10**, the gingerbread man is seen running off and the bear is forced to sit down and rest.